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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/015,993 | 12/12/2001 | Hung-Ming Chien | BP 1989 | 3539 |
| 7590 | 05/08/2006 | | EXAMINER | |
| Timothy W. Markison P.O. Box 160727 Austin, TX 78716-0727 | | | TAYLOR, BARRY W | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2617 | |

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/015,993 | CHIEN ET AL. | |
| | Examiner | Art Unit | |
| | Barry W. Taylor | 2617 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on ____.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-41 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
 5) Claim(s) ____ is/are allowed.
 6) Claim(s) 1-4,8-10,13,15-17,21,22,27-29,33,35-37 and 41 is/are rejected.
 7) Claim(s) 5-7,11,12,14,18-20,23-26,30-32,34 and 38-40 is/are objected to.
 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 12 December 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12/12/01</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: ____ . |

DETAILED ACTION

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1, 3-4, 9-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petty (5,187,722) in view Fan (2002/0121938).

Regarding claims 1 and 33. Petty teaches an integrated radio comprising a fractional synthesizer (title, abstract, figures 1-6) comprising:

a forward path operably coupled to produce an output frequency from a reference frequency (see input and output frequencies in figures 1-6) and a feedback

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reference frequency that is based on a divider value (item 105 figures 1-3 item 401 figures 4-6);

a configurable feedback path operably coupled to produce the feedback frequency (see FRACTIONAL MULTIPLY in figures 4-6).

Petty does not explicitly show first and second feedback path selected based on whether or not a fractional value of the divider is within a range of fractional values.\

Fan also teaches fractional frequency divider wherein the fractional divider is configured to selectively divide the output of the voltage controlled oscillator by either N or $N+1/2$ for fractional components less than 0.5, or, by either $N+1/2$ or $N+1$ for fractional components greater than 0.5 thereby reducing phase error by half which provides for better performance (title, abstract, paragraphs 0012 and 0022).

It would have been obvious for any one of ordinary skill in the art at the time of invention to utilize the teachings of Fan into the teaching of Petty in order to reduce phase errors thereby improving performance and saving on power consumption.

Regarding claims 3, 10, 17, 22, 29, and 36. Petty does not show sigma delta modulator.

Fan also teaches fractional frequency divider wherein the fractional divider is configured to selectively divide the output of the voltage controlled oscillator by either N or $N+1/2$ for fractional components less than 0.5, or, by either $N+1/2$ or $N+1$ for fractional components greater than 0.5 thereby reducing phase error by half which provides for better performance (title, abstract, paragraphs 0012 and 0022). Fan

teaches using sigma-delta modulator to control the frequency divider (paragraphs 0006, 0007, 0013, 0022, 0028, 0029, 0030).

It would have been obvious for any one of ordinary skill in the art at the time of invention to utilize the teachings of Fan into the teaching of Petty in order to reduce phase errors thereby improving performance and saving on power consumption.

Regarding claims 4 and 37. Fan teaches a fixed divider (see 150 figure 1, paragraphs 0004 – 0011).

Method claims 9 and 15 are rejected for the same reason as apparatus claims 1 and 33.

Regarding claims 13, 16 and 28. Fan teaches determining fractional and integer value to be used (see N or N+0.5 or N+0.5 or N+1 in figure 2).

Program claims 21 and 27 are rejected for the same reasons as apparatus claims 1 and 33.

2. Claims 2, 8, 35 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petty (5,187,722) in view Fan (2002/0121938) further in view of Irwin (5,774,023).

Regarding claims 2 and 35. Petty in view of Fan do not explicitly show charge pump being used.

Irwin also teaches a phase lock loop system wherein a charge pump is used to produce pulses to be supplied to a loop filter which is supplied to voltage control oscillator (col. 1 lines 42—18, col. 2 lines 12-47, col. 3 lines 7-47).

It would have been obvious for any one of ordinary skill in the art at the time of invention to utilize the teachings of Irwin into the teachings of Petty and Fan in order to suppress spurious outputs of the phase detector while keeping the loop bandwidth as wide as possible.

Regarding claims 8 and 41. Petty in view of Fan do not show controller being used.

Irwin also teaches a phase lock loop system wherein a charge pump is used to produce pulses to be supplied to a loop filter which is supplied to voltage control oscillator (col. 1 lines 42—18, col. 2 lines 12-47, col. 3 lines 7-47). Irwin shows CPU utilizes information to tune divider values thereby providing for a more stable output frequency (col. 4 lines 27-52).

It would have been obvious for any one of ordinary skill in the art at the time of invention to utilize the teachings of Irwin into the teachings of Petty and Fan in order to suppress spurious outputs of the phase detector while keeping the loop bandwidth as wide as possible.

Allowable Subject Matter

3. Claims 5-7, 11-12, 14, 18-20, 23-26, 30-32, 34 and 38-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

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independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry W. Taylor, telephone number (571) 272-7509, who is available Monday-Thursday, 6:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost, can be reached at (571) 272-7872. The central facsimile phone number for this group is **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2600 receptionist whose telephone number is (571) 272-2600, the 2600 Customer Service telephone number is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Centralized Delivery Policy: For patent related correspondence, hand carry deliveries must be made to the Customer Service Window (now located at the Randolph Building, 401 Dulany Street, Alexandria, VA 22314), and facsimile transmissions must be sent to the central fax number (**571-273-8300**).

Barry W. Taylor
Art Unit 2617


BARRY TAYLOR
PRIMARY EXAMINER *5/2/06*